

112911\_161.ST25  
SEQUENCE LISTING

<110> McLendon, George L.  
 <120> IAP-BINDING CARGO MOLECULES AND PEPTIDOMIMETICS FOR USE IN  
 DIAGNOSTIC AND THERAPEUTIC METHODS  
 <130> 112911.01601  
 <140> 10/777,946  
 <141> 2004-12-12  
 <150> 60/446,903  
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Arg Ala Gly Phe Leu Tyr Thr Gly Glu Gly Asp Thr Val Arg Cys Phe  
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Ser Cys His Ala Ala Val Asp Arg Trp Gln Tyr Gly Asp Ser Ala Val  
 65 70 75 80

Gly Arg His Arg Lys Val Ser Pro Asn Cys Arg Phe Ile Asn Gly Phe  
 85 90 95

Tyr Leu Glu Asn Ser Ala Thr Gln Ser Thr Asn Ser Gly Ile Gln Asn  
 100 105 110

Gly Gln Tyr Lys Val Glu Asn Tyr Leu Gly Ser Arg Asp His Phe Ala  
 115 120 125

Leu Asp Arg Pro Ser Glu Thr His Ala Asp Tyr Leu Leu Arg Thr Gly  
 130 135 140

Gln Val Val Asp Ile Ser Asp Thr Ile Tyr Pro Arg Asn Pro Ala Met  
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145	150	155	160
Tyr Ser Glu Glu Ala Arg Leu Lys Ser Phe Gln Asn Trp Pro Asp Tyr	165	170	175
Ala His Leu Thr Pro Arg Glu Leu Ala Ser Ala Gly Leu Tyr Tyr Thr	180	185	190
Gly Ile Gly Asp Gln Val Gln Cys Phe Cys Cys Gly Gly Lys Leu Lys	195	200	205
Asn Trp Glu Pro Cys Asp Arg Ala Trp Ser Glu His Arg Arg His Phe	210	215	220
Pro Asn Cys Phe Phe Val Leu Gly Arg Asn Leu Asn Ile Arg Ser Glu	225	230	235
Ser Asp Ala Val Ser Ser Asp Arg Asn Phe Pro Asn Ser Thr Asn Leu	245	250	255
Pro Arg Asn Pro Ser Met Ala Asp Tyr Glu Ala Arg Ile Phe Thr Phe	260	265	270
Gly Thr Trp Ile Tyr Ser Val Asn Lys Glu Gln Leu Ala Arg Ala Gly	275	280	285
Phe Tyr Ala Leu Gly Glu Gly Asp Lys Val Lys Cys Phe His Cys Gly	290	295	300
Gly Gly Leu Thr Asp Trp Lys Pro Ser Glu Asp Pro Trp Glu Gln His	305	310	315
Ala Lys Trp Tyr Pro Gly Cys Lys Tyr Leu Leu Glu Gln Lys Gly Gln	325	330	335
Glu Tyr Ile Asn Asn Ile His Leu Thr His Ser Leu Glu Glu Cys Leu	340	345	350
Val Arg Thr Thr Glu Lys Thr Pro Ser Leu Thr Arg Arg Ile Asp Asp	355	360	365
Thr Ile Phe Gln Asn Pro Met Val Gln Glu Ala Ile Arg Met Gly Phe	370	375	380
Ser Phe Lys Asp Ile Lys Lys Ile Met Glu Glu Lys Ile Gln Ile Ser	385	390	395

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Gly Ser Asn Tyr Lys Ser Leu Glu Val Leu Val Ala Asp Leu Val Asn  
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Ala Gln Lys Asp Ser Met Gln Asp Glu Ser Ser Gln Thr Ser Leu Gln  
420 425 430

Lys Glu Ile Ser Thr Glu Glu Gln Leu Arg Arg Leu Gln Glu Glu Lys  
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Leu Cys Lys Ile Cys Met Asp Arg Asn Ile Ala Ile Val Phe Val Pro  
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Cys Thr Pro Glu Arg Met Ala Glu Ala Gly Phe Ile His Cys Pro Thr  
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Glu Asn Glu Pro Asp Leu Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu  
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Glu Gly Trp Glu Pro Asp Asp Asp Pro Ile Glu Glu His Lys Lys His  
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Ser Ser Gly Cys Ala Phe Leu Ser Val Lys Lys Gln Phe Glu Glu Leu  
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Thr Leu Gly Glu Phe Leu Lys Leu Asp Arg Glu Arg Ala Lys Asn Lys  
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Asp His Val Asp Gly Gln Ile Leu Gly Gln Leu Arg Pro Leu Thr Glu  
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Glu Glu Glu Glu Glu Gly Ala Gly Ala Thr Leu Ser Arg Gly Pro Ala  
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Phe Pro Gly Met Gly Ser Glu Glu Leu Arg Leu Ala Ser Phe Tyr Asp  
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Trp Pro Leu Thr Ala Glu Val Pro Pro Glu Leu Leu Ala Ala Ala Gly  
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Phe Phe His Thr Gly His Gln Asp Lys Val Arg Cys Phe Phe Cys Tyr  
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Gly Gly Leu Gln Ser Trp Lys Arg Gly Asp Asp Pro Trp Thr Glu His  
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Ala Lys Trp Phe Pro Ser Cys Gln Phe Leu Leu Arg Ser Lys Gly Arg  
 145 150 155 160

Asp Phe Val His Ser Val Gln Glu Thr His Ser Gln Leu Leu Gly Ser  
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Trp Asp Pro Trp Glu Glu Pro Glu Asp Ala Ala Pro Val Ala Pro Ser  
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Val Pro Ala Ser Gly Tyr Pro Glu Leu Pro Thr Pro Arg Arg Glu Val  
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Gln Ser Glu Ser Ala Gln Glu Pro Gly Gly Val Ser Pro Ala Glu Ala  
210 215 220

Gln Arg Ala Trp Trp Val Leu Glu Pro Pro Gly Ala Arg Asp Val Glu  
225 230 235 240

Ala Gln Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys Leu  
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Asp Arg Ala Val Ser Ile Val Phe Val Pro Cys Gly His Leu Val Cys  
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Arg Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro Val Ser Glu  
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Arg Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys  
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Val Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp Lys Leu Gly  
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Asp Ser Pro Ile Gln Lys His Lys Gln Leu Tyr Pro Ser Cys Ser Phe  
100 105 110

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Ile Gln Asn Leu Val Ser Ala Ser Leu Gly Ser Thr Ser Lys Asn Thr  
115 120 125

Ser Pro Met Arg Asn Ser Phe Ala His Ser Leu Ser Pro Thr Leu Glu  
130 135 140

His Ser Ser Leu Phe Ser Gly Ser Tyr Ser Ser Leu Ser Pro Asn Pro  
145 150 155 160

Leu Asn Ser Arg Ala Val Glu Asp Ile Ser Ser Ser Arg Thr Asn Pro  
165 170 175

Tyr Ser Tyr Ala Met Ser Thr Glu Glu Ala Arg Phe Leu Thr Tyr His  
180 185 190

Met Trp Pro Leu Thr Phe Leu Ser Pro Ser Glu Leu Ala Arg Ala Gly  
195 200 205

Phe Tyr Tyr Ile Gly Pro Gly Asp Arg Val Ala Cys Phe Ala Cys Gly  
210 215 220

Gly Lys Leu Ser Asn Trp Glu Pro Lys Asp Asp Ala Met Ser Glu His  
225 230 235 240

Arg Arg His Phe Pro Asn Cys Pro Phe Leu Glu Asn Ser Leu Glu Thr  
245 250 255

Leu Arg Phe Ser Ile Ser Asn Leu Ser Met Gln Thr His Ala Ala Arg  
260 265 270

Met Arg Thr Phe Met Tyr Trp Pro Ser Ser Val Pro Val Gln Pro Glu  
275 280 285

Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Arg Asn Asp Asp Val  
290 295 300

Lys Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys Trp Glu Ser Gly Asp  
305 310 315 320

Asp Pro Trp Val Glu His Ala Lys Trp Phe Pro Arg Cys Glu Phe Leu  
325 330 335

Ile Arg Met Lys Gly Gln Glu Phe Val Asp Glu Ile Gln Gly Arg Tyr  
340 345 350

Pro His Leu Leu Glu Gln Leu Leu Ser Thr Ser Asp Thr Thr Gly Glu  
355 360 365

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Glu Asn Ala Asp Pro Pro Ile Ile His Phe Gly Pro Gly Glu Ser Ser  
 370 375 380  
 Ser Glu Asp Ala Val Met Met Asn Thr Pro Val Val Lys Ser Ala Leu  
 385 390 395 400  
 Glu Met Gly Phe Asn Arg Asp Leu Val Lys Gln Thr Val Gln Ser Lys  
 405 410 415  
 Ile Leu Thr Thr Gly Glu Asn Tyr Lys Thr Val Asn Asp Ile Val Ser  
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 Ala Leu Leu Asn Ala Glu Asp Glu Lys Arg Glu Glu Glu Lys Glu Lys  
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 Lys Gln Lys Thr Gln Ile Pro Leu Gln Ala Arg Glu Leu Ile Asp Thr  
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 565 570 575  
 Lys Glu Val Ser Val Val Phe Ile Pro Cys Gly His Leu Val Val Cys  
 580 585 590  
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Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys Val
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Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp Lys Arg Gly Asp
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Ser Pro Thr Glu Lys His Lys Lys Leu Tyr Pro Ser Cys Arg Phe Val
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Gln Ser Leu Asn Ser Val Asn Asn Leu Glu Ala Thr Ser Gln Pro Thr
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Phe Pro Ser Ser Val Thr Asn Ser Thr His Ser Leu Leu Pro Gly Thr
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Glu Asn Ser Gly Tyr Phe Arg Gly Ser Tyr Ser Asn Ser Pro Ser Asn
130     135     140

Pro Val Asn Ser Arg Ala Asn Gln Asp Phe Ser Ala Leu Met Arg Ser
145     150     155     160

Ser Tyr His Cys Ala Met Asn Asn Glu Asn Ala Arg Leu Leu Thr Phe
165     170     175

Gln Thr Trp Pro Leu Thr Phe Leu Ser Pro Thr Asp Leu Ala Lys Ala
180     185     190

Gly Phe Tyr Tyr Ile Gly Pro Gly Asp Arg Val Ala Cys Phe Ala Cys
195     200     205

Gly Gly Lys Leu Ser Asn Trp Glu Pro Lys Asp Asn Ala Met Ser Glu
210     215     220
    
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His Leu Arg His Phe Pro Lys Cys Pro Phe Ile Glu Asn Gln Leu Gln  
225 230 235 240

Asp Thr Ser Arg Tyr Thr Val Ser Asn Leu Ser Met Gln Thr His Ala  
245 250 255

Ala Arg Phe Lys Thr Phe Phe Asn Trp Pro Ser Ser Val Leu Val Asn  
260 265 270

Pro Glu Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Asn Ser Asp  
275 280 285

Asp Val Lys Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys Trp Glu Ser  
290 295 300

Gly Asp Asp Pro Trp Val Gln His Ala Lys Trp Phe Pro Arg Cys Glu  
305 310 315 320

Tyr Leu Ile Arg Ile Lys Gly Gln Glu Phe Ile Arg Gln Val Gln Ala  
325 330 335

Ser Tyr Pro His Leu Leu Glu Gln Leu Leu Ser Thr Ser Asp Ser Pro  
340 345 350

Gly Asp Glu Asn Ala Glu Ser Ser Ile Ile His Phe Glu Pro Gly Glu  
355 360 365

Asp His Ser Glu Asp Ala Ile Met Met Asn Thr Pro Val Ile Asn Ala  
370 375 380

Ala Val Glu Met Gly Phe Ser Arg Ser Leu Val Lys Gln Thr Val Gln  
385 390 395 400

Arg Lys Ile Leu Ala Thr Gly Glu Asn Tyr Arg Leu Val Asn Asp Leu  
405 410 415

Val Leu Asp Leu Leu Asn Ala Glu Asp Glu Ile Arg Glu Glu Glu Arg  
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Glu Arg Ala Thr Glu Glu Lys Glu Ser Asn Asp Leu Leu Leu Ile Arg  
435 440 445

Lys Asn Arg Met Ala Leu Phe Gln His Leu Thr Cys Val Ile Pro Ile  
450 455 460

Leu Asp Ser Leu Leu Thr Ala Gly Ile Ile Asn Glu Gln Glu His Asp  
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465 470 475 480

Val Ile Lys Gln Lys Thr Gln Thr Ser Leu Gln Ala Arg Glu Leu Ile  
485 490 495

Asp Thr Ile Leu Val Lys Gly Asn Ile Ala Ala Thr Val Phe Arg Asn  
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Ser Leu Gln Glu Ala Glu Ala Val Leu Tyr Glu His Leu Phe Val Gln  
515 520 525

Gln Asp Ile Lys Tyr Ile Pro Thr Glu Asp Val Ser Asp Leu Pro Val  
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Glu Glu Gln Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys  
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Met Asp Lys Glu Val Ser Ile Val Phe Ile Pro Cys Gly His Leu Val  
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Gly Phe Gly Val Thr Leu Cys Ala Val Pro Ile Ala Gln Lys Ser Glu  
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Pro His Ser Leu Ser Ser Glu Ala Leu Met Arg Arg Ala Val Ser Leu  
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Val Thr Asp Ser Thr Ser Thr Phe Leu Ser Gln Thr Thr Tyr Ala Leu

85 112911\_161.ST25 95  
90

Ile Glu Ala Ile Thr Glu Tyr Thr Lys Ala Val Tyr Thr Leu Thr Ser  
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Leu Tyr Arg Gln Tyr Thr Ser Leu Leu Gly Lys Met Asn Ser Glu Glu  
115 120 125

Glu Asp Glu Val Trp Gln Val Ile Ile Gly Ala Arg Ala Glu Met Thr  
130 135 140

Ser Lys His Gln Glu Tyr Leu Lys Leu Glu Thr Thr Trp Met Thr Ala  
145 150 155 160

Val Gly Leu Ser Glu Met Ala Ala Glu Ala Ala Tyr Gln Thr Gly Ala  
165 170 175

Asp Gln Ala Ser Ile Thr Ala Arg Asn His Ile Gln Leu Val Lys Leu  
180 185 190

Gln Val Glu Glu Val His Gln Leu Ser Arg Lys Ala Glu Thr Lys Leu  
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35 40 45

Gln Gln Gln Arg Ala Ala Met Leu Ile Lys Met Ile Leu Lys Lys Asp  
50 55 60

Asn Asp Ser Tyr Val Ser Phe Tyr Asn Ala Leu Leu His Glu Gly Tyr  
Page 11

65 70 112911\_161.ST25 75 80

Lys Asp Leu Ala Ala Leu Leu His Asp Gly Ile Pro Val Val Ser Ser  
85 90 95

Ser Ser Gly Lys Asp Ser Val Ser Gly Ile Thr Ser Tyr Val Arg Thr  
100 105 110

Val Leu Cys Glu Gly Gly Val Pro Gln Arg Pro Val Val Phe Val Thr  
115 120 125

Arg Lys Lys Leu Val Asn Ala Ile Gln Gln Lys Leu Ser Lys Leu Lys  
130 135 140

Gly Glu Pro Gly Trp Val Thr Ile His Gly Met Ala Gly Cys Gly Lys  
145 150 155 160

Ser Val Leu Ala Ala Glu Ala Val Arg Asp His Ser Leu Leu Glu Gly  
165 170 175

Cys Phe Pro Gly Gly Val His Trp Val Ser Val Gly Lys Gln Asp Lys  
180 185 190

Ser Gly Leu Leu Met Lys Leu Gln Asn Leu Cys Thr Arg Leu Asp Gln  
195 200 205

Asp Glu Ser Phe Ser Gln Arg Leu Pro Leu Asn Ile Glu Glu Ala Lys  
210 215 220

Asp Arg Leu Arg Ile Leu Met Leu Arg Lys His Pro Arg Ser Leu Leu  
225 230 235 240

Ile Leu Asp Asp Val Trp Asp Ser Trp Val Leu Lys Ala Phe Asp Ser  
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Gln Cys Gln Ile Leu Leu Thr Thr Arg Asp Lys Ser Val Thr Asp Ser  
260 265 270

Val Met Gly Pro Lys Tyr Val Val Pro Val Glu Ser Ser Leu Gly Lys  
275 280 285

Glu Lys Gly Leu Glu Ile Leu Ser Leu Phe Val Asn Met Lys Lys Ala  
290 295 300

Asp Leu Pro Glu Gln Ala His Ser Ile Ile Lys Glu Cys Lys Gly Ser  
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Pro Leu Val Val Ser Leu Ile Gly Ala Leu Leu Arg Asp Phe Pro Asn  
325 330 335

Arg Trp Glu Tyr Tyr Leu Lys Gln Leu Gln Asn Lys Gln Phe Lys Arg  
340 345 350

Ile Arg Lys Ser Ser Ser Tyr Asp Tyr Glu Ala Leu Asp Glu Ala Met  
355 360 365

Ser Ile Ser Val Glu Met Leu Arg Glu Asp Ile Lys Asp Tyr Tyr Thr  
370 375 380

Asp Leu Ser Ile Leu Gln Lys Asp Val Lys Val Pro Thr Lys Val Leu  
385 390 395 400

Cys Ile Leu Trp Asp Met Glu Thr Glu Glu Val Glu Asp Ile Leu Gln  
405 410 415

Glu Phe Val Asn Lys Ser Leu Leu Phe Cys Asp Arg Asn Gly Lys Ser  
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Phe Arg Tyr Tyr Leu His Asp Leu Gln Val Asp Phe Leu Thr Glu Lys  
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Asn Cys Ser Gln Leu Gln Asp Leu His Lys Lys Ile Ile Thr Gln Phe  
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Gln Arg Tyr His Gln Pro His Thr Leu Ser Pro Asp Gln Glu Asp Cys  
465 470 475 480

Met Tyr Trp Tyr Asn Phe Leu Ala Tyr His Met Ala Ser Ala Lys Met  
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His Lys Glu Leu Cys Ala Leu Met Phe Ser Leu Asp Trp Ile Lys Ala  
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Lys Thr Glu Leu Val Gly Pro Ala His Leu Ile His Glu Phe Val Glu  
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Tyr Arg His Ile Leu Asp Glu Lys Asp Cys Ala Val Ser Glu Asn Phe  
530 535 540

Gln Glu Phe Leu Ser Leu Asn Gly His Leu Leu Gly Arg Gln Pro Phe  
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Pro Asn Ile Val Gln Leu Gly Leu Cys Glu Pro Glu Thr Ser Glu Val  
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 595 600 605  
 Leu Val Val Arg Pro His Thr Asp Ala Val Tyr His Ala Cys Phe Ser  
 610 615 620  
 Glu Asp Gly Gln Arg Ile Ala Ser Cys Gly Ala Asp Lys Thr Leu Gln  
 625 630 635 640  
 Val Phe Lys Ala Glu Thr Gly Glu Lys Leu Leu Glu Ile Lys Ala His  
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 Glu Asp Glu Val Leu Cys Cys Ala Phe Ser Thr Asp Asp Arg Phe Ile  
 660 665 670  
 Ala Thr Cys Ser Val Asp Lys Lys Val Lys Ile Trp Asn Ser Met Thr  
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 Gly Glu Leu Val His Thr Tyr Asp Glu His Ser Glu Gln Val Asn Cys  
 690 695 700  
 Cys His Phe Thr Asn Ser Ser His His Leu Leu Leu Ala Thr Gly Ser  
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 Ser Asp Cys Phe Leu Lys Leu Trp Asp Leu Asn Gln Lys Glu Cys Arg  
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 Asn Thr Met Phe Gly His Thr Asn Ser Val Asn His Cys Arg Phe Ser  
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 Pro Asp Asp Lys Leu Leu Ala Ser Cys Ser Ala Asp Gly Thr Leu Lys  
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 Leu Trp Asp Ala Thr Ser Ala Asn Glu Arg Lys Ser Ile Asn Val Lys  
 770 775 780  
 Gln Phe Phe Leu Asn Leu Glu Asp Pro Gln Glu Asp Met Glu Val Ile  
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 Val Lys Cys Cys Ser Trp Ser Ala Asp Gly Ala Arg Ile Met Val Ala  
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 Ala Lys Asn Lys Ile Phe Leu Phe Asp Ile His Thr Ser Gly Leu Leu  
 820 825 830

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Gly Glu Ile His Thr Gly His His Ser Thr Ile Gln Tyr Cys Asp Phe  
835 840 845

Ser Pro Gln Asn His Leu Ala Val Val Ala Leu Ser Gln Tyr Cys Val  
850 855 860

Glu Leu Trp Asn Thr Asp Ser Arg Ser Lys Val Ala Asp Cys Arg Gly  
865 870 875 880

His Leu Ser Trp Val His Gly Val Met Phe Ser Pro Asp Gly Ser Ser  
885 890 895

Phe Leu Thr Ser Ser Asp Asp Gln Thr Ile Arg Leu Trp Glu Thr Lys  
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Lys Val Cys Lys Asn Ser Ala Val Met Leu Lys Gln Glu Val Asp Val  
915 920 925

Val Phe Gln Glu Asn Glu Val Met Val Leu Ala Val Asp His Ile Arg  
930 935 940

Arg Leu Gln Leu Ile Asn Gly Arg Thr Gly Gln Ile Asp Tyr Leu Thr  
945 950 955 960

Glu Ala Gln Val Ser Cys Cys Cys Leu Ser Pro His Leu Gln Tyr Ile  
965 970 975

Ala Phe Gly Asp Glu Asn Gly Ala Ile Glu Ile Leu Glu Leu Val Asn  
980 985 990

Asn Arg Ile Phe Gln Ser Arg Phe Gln His Lys Lys Thr Val Trp His  
995 1000 1005

Ile Gln Phe Thr Ala Asp Glu Lys Thr Leu Ile Ser Ser Ser Asp  
1010 1015 1020

Asp Ala Glu Ile Gln Val Trp Asn Trp Gln Leu Asp Lys Cys Ile  
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Phe Leu Arg Gly His Gln Glu Thr Val Lys Asp Phe Arg Leu Leu  
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Lys Asn Ser Arg Leu Leu Ser Trp Ser Phe Asp Gly Thr Val Lys  
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Val Trp Asn Ile Ile Thr Gly Asn Lys Glu Lys Asp Phe Val Cys

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1080

1070

1075

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Lys Phe Ser Ser Thr Ser Ala Asp Lys Thr Ala Lys Ile Trp Ser  
1100 1105 1110

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Cys Val Arg Cys Ser Ala Phe Ser Val Asp Ser Thr Leu Leu Ala  
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Thr Gly Asp Asp Asn Gly Glu Ile Arg Ile Trp Asn Val Ser Asn  
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Gly Glu Leu Leu His Leu Cys Ala Pro Leu Ser Glu Glu Gly Ala  
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Ala Thr His Gly Gly Trp Val Thr Asp Leu Cys Phe Ser Pro Asp  
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Gly Lys Met Leu Ile Ser Ala Gly Gly Tyr Ile Lys Trp Trp Asn  
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Val Val Thr Gly Glu Ser Ser Gln Thr Phe Tyr Thr Asn Gly Thr  
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Asn Leu Lys Lys Ile His Val Ser Pro Asp Phe Lys Thr Tyr Val  
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Glu Leu Phe Arg Pro His Met Ile Glu Asp Ile Gln Arg Ala Gly Ser  
Page 16



35

40

45

Gly Ser Arg Arg Asp Gln Ala Arg Gln Leu Ile Ile Asp Leu Glu Thr  
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Gly Gln Asp Met Leu Ala Ser Phe Leu Arg Thr Asn Arg Gln Ala Ala  
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Lys Leu Ser Lys Pro Thr Leu Glu Asn Leu Thr Pro Val Val Leu Arg  
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Pro Glu Ile Arg Lys Pro Glu Val Leu Arg Pro Glu Thr Pro Arg Pro  
115 120 125

Val Asp Ile Gly Ser Gly Gly Phe Gly Asp Val Gly Ala Leu Glu Ser  
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Leu Arg Gly Asn Ala Asp Leu Ala Tyr Ile Leu Ser Met Glu Pro Cys  
145 150 155 160

Gly His Cys Leu Ile Ile Asn Asn Val Asn Phe Cys Arg Glu Ser Gly  
165 170 175

Leu Arg Thr Arg Thr Gly Ser Asn Ile Asp Cys Glu Lys Leu Arg Arg  
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Arg Phe Ser Ser Leu His Phe Met Val Glu Val Lys Gly Asp Leu Thr  
195 200 205

Ala Lys Lys Met Val Leu Ala Leu Leu Glu Leu Ala Gln Gln Asp His  
210 215 220

Gly Ala Leu Asp Cys Cys Val Val Val Ile Leu Ser His Gly Cys Gln  
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Ala Ser His Leu Gln Phe Pro Gly Ala Val Tyr Gly Thr Asp Gly Cys  
245 250 255

Pro Val Ser Val Glu Lys Ile Val Asn Ile Phe Asn Gly Thr Ser Cys  
260 265 270

Pro Ser Leu Gly Gly Lys Pro Lys Leu Phe Phe Ile Gln Ala Cys Gly  
275 280 285

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Gly Glu Gln Lys Asp His Gly Phe Glu Val Ala Ser Thr Ser Pro Glu  
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Asp Glu Ser Pro Gly Ser Asn Pro Glu Pro Asp Ala Thr Pro Phe Gln  
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Glu Gly Leu Arg Thr Phe Asp Gln Leu Asp Ala Ile Ser Ser Leu Pro  
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Thr Pro Ser Asp Ile Phe Val Ser Tyr Ser Thr Phe Pro Gly Phe Val  
340 345 350

Ser Trp Arg Asp Pro Lys Ser Gly Ser Trp Tyr Val Glu Thr Leu Asp  
355 360 365

Asp Ile Phe Glu Gln Trp Ala His Ser Glu Asp Leu Gln Ser Leu Leu  
370 375 380

Leu Arg Val Ala Asn Ala Val Ser Val Lys Gly Ile Tyr Lys Gln Met  
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Glu Pro Lys Ile Ile His Gly Ser Glu Ser Met Asp Ser Gly Ile Ser  
20 25 30

Leu Asp Asn Ser Tyr Lys Met Asp Tyr Pro Glu Met Gly Leu Cys Ile  
35 40 45

Ile Ile Asn Asn Lys Asn Phe His Lys Ser Thr Gly Met Thr Ser Arg  
50 55 60

Ser Gly Thr Asp Val Asp Ala Ala Asn Leu Arg Glu Thr Phe Arg Asn  
65 70 75 80

Leu Lys Tyr Glu Val Arg Asn Lys Asn Asp Leu Thr Arg Glu Glu Ile  
85 90 95

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Val Glu Leu Met Arg Asp Val Ser Lys Glu Asp His Ser Lys Arg Ser  
100 105 110

Ser Phe Val Cys Val Leu Leu Ser His Gly Glu Glu Gly Ile Ile Phe  
115 120 125

Gly Thr Asn Gly Pro Val Asp Leu Lys Lys Ile Thr Asn Phe Phe Arg  
130 135 140

Gly Asp Arg Cys Arg Ser Leu Thr Gly Lys Pro Lys Leu Phe Ile Ile  
145 150 155 160

Gln Ala Cys Arg Gly Thr Glu Leu Asp Cys Gly Ile Glu Thr Asp Ser  
165 170 175

Gly Val Asp Asp Asp Met Ala Cys His Lys Ile Pro Val Asp Ala Asp  
180 185 190

Phe Leu Tyr Ala Tyr Ser Thr Ala Pro Gly Tyr Tyr Ser Trp Arg Asn  
195 200 205

Ser Lys Asp Gly Ser Trp Phe Ile Gln Ser Leu Cys Ala Met Leu Lys  
210 215 220

Gln Tyr Ala Asp Lys Leu Glu Phe Met His Ile Leu Thr Arg Val Asn  
225 230 235 240

Arg Lys Val Ala Thr Glu Phe Glu Ser Phe Ser Phe Asp Ala Thr Phe  
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His Ala Lys Lys Gln Ile Pro Cys Ile Val Ser Met Leu Thr Lys Glu  
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Leu Tyr Phe Tyr His  
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<212> PRT

<213> Drosophila melanogaster

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Asp Gln Val Asp Asn Asn Thr Asn Ala Thr Gln Leu Phe Lys Asn Asn  
20 25 30

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Ile Asn Lys Thr Arg Met Asn Asp Leu Asn Arg Glu Glu Thr Arg Leu  
 35 40 45  
 Lys Thr Phe Thr Asp Trp Pro Leu Asp Trp Leu Asp Lys Arg Gln Leu  
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 Ala Gln Thr Gly Met Tyr Phe Thr His Ala Gly Asp Lys Val Lys Cys  
 65 70 75 80  
 Phe Phe Cys Gly Val Glu Ile Gly Cys Trp Glu Gln Glu Asp Gln Pro  
 85 90 95  
 Val Pro Glu His Gln Arg Trp Ser Pro Asn Cys Pro Leu Leu Arg Arg  
 100 105 110  
 Arg Thr Thr Asn Asn Val Pro Ile Asn Ala Glu Ala Leu Asp Arg Ile  
 115 120 125  
 Leu Pro Pro Ile Ser Tyr Asp Ile Cys Gly Ala Asn Asp Ser Thr Leu  
 130 135 140  
 Glu Met Arg Glu His Ala Tyr Ala Glu Gly Val Ile Pro Met Ser Gln  
 145 150 155 160  
 Leu Ile Gln Ser Ile Gly Met Asn Ala Val Asn Ala Ala Gly Ser Val  
 165 170 175  
 Thr Gly Thr Ala Ala Pro Gln Pro Arg Val Thr Val Ala Thr His Ala  
 180 185 190  
 Ser Thr Ala Thr Gln Ala Thr Gly Asp Val Gln Pro Glu Thr Cys Arg  
 195 200 205  
 Pro Ser Ala Ala Ser Gly Asn Tyr Phe Pro Gln Tyr Pro Glu Tyr Ala  
 210 215 220  
 Ile Glu Thr Ala Arg Leu Arg Thr Phe Glu Ala Trp Pro Arg Asn Leu  
 225 230 235 240  
 Lys Gln Lys Pro His Gln Leu Ala Glu Ala Gly Phe Phe Tyr Thr Gly  
 245 250 255  
 Val Gly Asp Arg Val Arg Cys Phe Ser Cys Gly Gly Gly Leu Met Asp  
 260 265 270  
 Trp Asn Asp Asn Asp Glu Pro Trp Glu Gln His Ala Leu Trp Leu Ser  
 275 280 285

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Gln Cys Arg Phe Val Lys Leu Met Lys Gly Gln Leu Tyr Ile Asp Thr  
290 295 300

Val Ala Ala Lys Pro Val Leu Ala Glu Glu Lys Glu Glu Ser Thr Ser  
305 310 315 320

Ile Gly Gly Asp Thr Val Ala Ser Thr Gln Ala Ser Glu Glu Glu Gln  
325 330 335

Gln Thr Ser Leu Ser Ser Glu Glu Ala Val Ser Gly Asp Val Ala Pro  
340 345 350

Ser Val Ala Pro Thr Ala Ala Thr Arg Ile Phe Asn Lys Ile Val Glu  
355 360 365

Ala Thr Ala Val Ala Thr Pro Ser Thr Asn Ser Ser Gly Ser Thr Ser  
370 375 380

Ile Pro Glu Glu Lys Leu Cys Lys Ile Cys Tyr Gly Ala Glu Tyr Asn  
385 390 395 400

Thr Ala Phe Leu Pro Cys Gly His Val Val Ala Cys Ala Lys Cys Ala  
405 410 415

Ser Ser Val Thr Lys Cys Pro Leu Cys Arg Lys Pro Phe Thr Asp Val  
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Met Arg Val Tyr Phe Ser  
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<213> Drosophila melanogaster

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20 25 30

Asn Gly Phe Phe Ala Thr Gly Asn Trp Leu Glu Ala Glu Cys His Phe  
35 40 45

Cys His Val Arg Ile Asp Arg Trp Glu Tyr Gly Asp Gln Val Ala Glu  
50 55 60

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Arg His Arg Arg Ser Ser Pro Ile Cys Ser Met Val Leu Ala Pro Asn  
65 70 75 80

His Cys Gly Asn Val Pro Arg Ser Gln Glu Ser Asp Asn Glu Gly Asn  
85 90 95

Ser Val Val Asp Ser Pro Glu Ser Cys Ser Cys Pro Asp Leu Leu Leu  
100 105 110

Glu Ala Asn Arg Leu Val Thr Phe Lys Asp Trp Pro Asn Pro Asn Ile  
115 120 125

Thr Pro Gln Ala Leu Ala Lys Ala Gly Phe Tyr Tyr Leu Asn Arg Leu  
130 135 140

Asp His Val Lys Cys Val Trp Cys Asn Gly Val Ile Ala Lys Trp Glu  
145 150 155 160

Lys Asn Asp Asn Ala Phe Glu Glu His Lys Arg Phe Phe Pro Gln Cys  
165 170 175

Pro Arg Val Gln Met Gly Pro Leu Ile Glu Phe Ala Thr Gly Lys Asn  
180 185 190

Leu Asp Glu Leu Gly Ile Gln Pro Thr Thr Leu Pro Leu Arg Pro Lys  
195 200 205

Tyr Ala Cys Val Asp Ala Arg Leu Arg Thr Phe Thr Asp Trp Pro Ile  
210 215 220

Ser Asn Ile Gln Pro Ala Ser Ala Leu Ala Gln Ala Gly Leu Tyr Tyr  
225 230 235 240

Gln Lys Ile Gly Asp Gln Val Arg Cys Phe His Cys Asn Ile Gly Leu  
245 250 255

Arg Ser Trp Gln Lys Glu Asp Glu Pro Trp Phe Glu His Ala Lys Trp  
260 265 270

Ser Pro Lys Cys Gln Phe Val Leu Leu Ala Lys Gly Pro Ala Tyr Val  
275 280 285

Ser Glu Val Leu Ala Thr Thr Ala Ala Asn Ala Ser Ser Pro Pro Ala  
290 295 300

Thr Ala Pro Ala Pro Thr Leu Gln Ala Asp Val Leu Met Asp Glu Ala  
305 310 315 320

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Pro Ala Lys Glu Ala Leu Ala Leu Gly Ile Asp Gly Gly Val Val Arg  
325 330 335

Asn Ala Ile Gln Arg Lys Leu Leu Ser Ser Gly Cys Ala Phe Ser Thr  
340 345 350

Leu Asp Glu Leu Leu His Asp Ile Phe Asp Asp Ala Gly Ala Gly Ala  
355 360 365

Ala Leu Glu Val Arg Glu Pro Pro Glu Pro Ser Ala Pro Phe Ile Glu  
370 375 380

Pro Cys Gln Ala Thr Thr Ser Lys Ala Ala Ser Val Pro Ile Pro Val  
385 390 395 400

Ala Asp Ser Ile Pro Ala Lys Pro Gln Ala Ala Glu Ala Val Ala Asn  
405 410 415

Ile Ser Lys Ile Thr Asp Glu Ile Gln Lys Met Ser Val Ala Thr Pro  
420 425 430

Asn Gly Asn Leu Ser Leu Glu Glu Glu Asn Arg Gln Leu Lys Asp Ala  
435 440 445

Arg Leu Cys Lys Val Cys Leu Asp Glu Glu Val Gly Val Val Phe Leu  
450 455 460

Pro Cys Gly His Leu Ala Thr Cys Asn Gln Cys Ala Pro Ser Val Ala  
465 470 475 480

Asn Cys Pro Met Cys Arg Ala Asp Ile Lys Gly Phe Val Arg Thr Phe  
485 490 495

Leu Ser

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<211> 410

<212> PRT

<213> Drosophila melanogaster

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20 25 30

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Leu Pro Ser Ser Ala Ser Ser Ser Val Ser Ser Ser Gly Val Ser Ser  
 35 40 45  
 Ala Ser Ala Ser Ser Ala Ser Ser Ser Ser Ala Ser Ser Asp Gly  
 50 55 60  
 Ala Ser Ser Ala Ala Ser Gln Ser Pro Asn Thr Thr Thr Ser Ser Ala  
 65 70 75 80  
 Thr Gln Thr Pro Met Gln Ser Pro Leu Pro Thr Asp Gln Val Leu Tyr  
 85 90 95  
 Ala Leu Tyr Glu Trp Val Arg Met Tyr Gln Ser Gln Gln Ser Ala Pro  
 100 105 110  
 Gln Ile Phe Gln Tyr Pro Pro Pro Ser Pro Ser Cys Asn Phe Thr Gly  
 115 120 125  
 Gly Asp Val Phe Phe Pro His Gly His Pro Asn Pro Asn Ser Asn Pro  
 130 135 140  
 His Pro Arg Thr Pro Arg Thr Ser Val Ser Phe Ser Ser Gly Glu Glu  
 145 150 155 160  
 Tyr Asn Phe Phe Arg Gln Gln Gln Pro Gln Pro His Pro Ser Tyr Pro  
 165 170 175  
 Ala Pro Ser Thr Pro Gln Pro Met Pro Pro Gln Ser Ala Pro Pro Met  
 180 185 190  
 His Cys Ser His Ser Tyr Pro Gln Gln Ser Ala His Met Met Pro His  
 195 200 205  
 His Ser Ala Pro Phe Gly Met Gly Gly Thr Tyr Tyr Ala Gly Tyr Thr  
 210 215 220  
 Pro Pro Pro Thr Pro Asn Thr Ala Ser Ala Gly Thr Ser Ser Ser Ser  
 225 230 235 240  
 Ala Ala Phe Gly Trp His Gly His Pro His Ser Pro Phe Thr Ser Thr  
 245 250 255  
 Ser Thr Pro Leu Ser Ala Pro Val Ala Pro Lys Met Arg Leu Gln Arg  
 260 265 270  
 Ser Gln Ser Asp Ala Ala Arg Arg Lys Arg Leu Thr Ser Thr Gly Glu



275 280 112911\_161.ST25 285

Asp Glu Arg Glu Tyr Gln Ser Asp His Glu Ala Thr Trp Asp Glu Phe  
290 295 300

Gly Asp Arg Tyr Asp Asn Phe Thr Ala Gly Arg Glu Arg Leu Gln Glu  
305 310 315 320

Phe Asn Gly Arg Ile Pro Pro Arg Lys Lys Lys Ser Ser Asn Ser His  
325 330 335

Ser Ser Ser Ser Asn Asn Pro Val Cys His Thr Asp Ser Gln Pro Gly  
340 345 350

Gly Thr Ser Gln Ala Glu Ser Gly Ala Ile His Gly His Ile Ser Gln  
355 360 365

Gln Arg Gln Val Glu Arg Glu Arg Gln Lys Ala Lys Ala Glu Lys Lys  
370 375 380

Lys Pro Gln Ser Phe Thr Trp Pro Thr Val Val Thr Val Phe Val Leu  
385 390 395 400

Ala Met Gly Cys Gly Phe Phe Ala Ala Arg  
405 410

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Met Ala Ile Ala Tyr Phe Ile Pro Asp Gln Ala Gln Leu Leu Ala Arg  
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Ser Tyr Gln Gln Asn Gly Gln Gln Thr Ala Ala Ser Pro Arg Thr Thr  
20 25 30

Ala Thr Ala Ala Ala Pro Ser Gln Gln Gln Gln Ser Gln Gln Gln  
35 40 45

Gln Gln Gln Gln Arg His His His Gln Gln Gln Arg Pro Gln Phe Arg  
50 55 60

Ala Asn Ile Ser Val Pro Leu Gly Ser Gln Gln Gly Ser Met Thr Met  
65 70 75 80

Ser Glu Phe Gly Cys Trp Asp Leu Leu Ala Gln Ile Phe Cys Tyr Ala  
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85 112911\_161.ST25 95  
90

Leu Arg Ile Tyr Ser Tyr Ser Ser Ser Gln Arg Gln Pro Thr Val Ile  
100 105 110

Gln Ile Ser Phe Glu Ile Ser Ser Gly Gly Gln Asn Asn Asp Glu Asp  
115 120 125

Asp Val Thr Asp Ala Thr Ser Lys Glu Asn  
130 135

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Ala Glu Gln Lys Glu Gln Gln Ile Leu Arg Leu Arg Glu Ser Gln Trp  
20 25 30

Arg Phe Leu Ala Thr Val Val Leu Glu Thr Leu Arg Gln Tyr Thr Ser  
35 40 45

Cys His Pro Lys Thr Gly Arg Lys Ser Gly Lys Tyr Arg Lys Pro Ser  
50 55 60

Gln  
65

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<213> Homo sapiens

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Tyr Glu Ala Arg Ile Phe Thr Phe Gly Thr Trp Ile Tyr Ser Val Asn  
1 5 10 15

Lys Glu Gln Leu Ala Arg Ala Gly Phe Tyr Ala Leu Gly Glu Gly Asp  
20 25 30

Lys Val Lys Cys Phe His Cys Gly Gly Gly Leu Thr Asp Trp Lys Pro  
35 40 45

Ser Glu Asp Pro Trp Glu Gln His Ala Lys Trp Tyr Pro Gly Cys Lys  
50 55 60

Tyr Leu  
65

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<213> Homo sapiens  
  
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Tyr Glu Ala Arg Ile Phe Thr Phe Gly Thr Trp Ile Tyr Ser Val Asn  
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Lys Glu Gln Leu Ala Arg Ala Gly Phe Tyr Ala Leu Gly Glu Gly Asp  
20 25 30

Lys Val Lys Cys Phe His Cys Gly Gly Gly Leu Thr Asp Trp Lys Pro  
35 40 45

Ser Glu Asp Pro Trp Glu Gln His Ala Lys Trp Tyr Pro Gly Cys Lys  
50 55 60

Tyr Leu  
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Ala Val Pro Ile  
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Ala Val Pro Phe  
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Ala Arg Pro Ile  
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<400> 23

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<400> 24

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<210> 25  
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Ala Leu Pro Ile  
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Ala Asx Val Pro Ile  
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<400> 27

Ala Ile Pro Ile  
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<400> 28

Ala Val Pro Tyr  
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<400> 29

Ala His Pro Ile  
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Ala Ile Pro Val  
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Ala Ile Pro Tyr  
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Ala Val Pro Thr  
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Ala Val Pro Val  
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Ala Val Pro Gly  
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Ala Val Pro His  
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Ala Val Pro Gln  
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Ala Val Pro Ala  
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Ala Val Pro Met  
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Ala Val Pro Glu  
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Ala Val Pro Asn  
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Ala Val Pro Ser  
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Ala Val Pro Arg  
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Ala Ile Pro Phe  
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Ala Thr Ala Val  
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Ala Thr Ala Ile  
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Ala Thr Ala Tyr  
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Ala Thr Ala Phe  
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Ala Ile Ala Val  
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Ala Ile Ala Ile  
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Ser Val Pro Ile  
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Ala Lys Pro Ile  
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Ala Tyr Pro Ile  
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Ala Cys Pro Ile  
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Ala Met Pro Ile  
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Ala Phe Pro Ile  
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Ala Gln Pro Ile  
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Ala Trp Pro Ile  
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Ala Thr Pro Ile

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&lt;211&gt; 4

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&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 69

Ala Ser Pro Ile

1

&lt;210&gt; 70

&lt;211&gt; 4

&lt;212&gt; PRT

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 70

Ala Asn Pro Ile

1

&lt;210&gt; 71

&lt;211&gt; 4

&lt;212&gt; PRT

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; Synthetic Peptide

&lt;400&gt; 71

Ala Glu Pro Ile

1

&lt;210&gt; 72

&lt;211&gt; 4

&lt;212&gt; PRT

&lt;213&gt; Artificial

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&lt;223&gt; Synthetic Peptide

&lt;400&gt; 72

Ala Ala Pro Ile

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&lt;210&gt; 73

&lt;211&gt; 4

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Ala Asp Pro Ile  
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Ala Pro Pro Ile  
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 bond between residues 3 and 4

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Ala Arg xaa Phe  
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 peptide bond between residues 3 and 4

<400> 76

Ala Val xaa Phe



1

<210> 77  
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<220>  
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<220>  
<221> Xaa is N-Methylalanine, N-Methylation at the  
peptide bond between residues 1 and 2

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Xaa Val Pro Phe  
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peptide bond between residues 1 and 2

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<221> Xaa is N-Methylproline, N-Methylation at the  
peptide bond between residues 3 and 4

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Xaa Val Xaa Phe  
1

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peptide bond between residues 3 and 4

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Ala Val Xaa Ile  
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<223> Synthetic Peptide

<220>  
<221> Xaa is N-Methylproline, N-methylation at the  
peptide bond between residues 3 and 4

<400> 80  
Ala Arg Xaa Ile  
1

<210> 81  
<211> 4  
<212> PRT  
<213> Artificial

<220>  
<222> 1  
<223> Synthetic Peptide

<220>  
<221> Xaa is N-Methylalanine, N-methylation at the  
peptide bond between residues 1 and 2

<400> 81

Xaa Val Pro Ile  
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<210> 82  
<211> 4  
<212> PRT  
<213> Artificial

<220>  
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<400> 82

Ala Ile Ala Tyr  
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<210> 83  
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<213> Artificial

<220>

<223> Synthetic Peptide

<400> 83

Ala Ile Ala Phe  
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<210> 84

<211> 4

<212> PRT

<213> Artificial

<220>

<223> Synthetic Peptide

<400> 84

Ala Thr Pro Tyr  
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<210> 85

<211> 4

<212> PRT

<213> Artificial

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<223> Synthetic Peptide

<400> 85

Ala Thr Pro Val  
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<210> 86

<211> 4

<212> PRT

<213> Artificial

<220>

<223> Synthetic Peptide

<400> 86

Ala Thr Pro Phe  
1

<210> 87

<211> 4

<212> PRT

<213> Artificial

<220>

<222> 2

<223> Synthetic Peptide

<220>

<221> Xaa is Leucine, which contains carbon 11

<400> 87

Ala Xaa Pro Ile

1